Boolean Operations

George Boole (1815-1864)

Dr. M. Tanvir Afzal
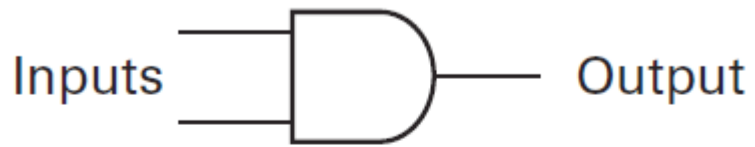
Boolean Operations

Imagine:

- ✓ O means False
- ✓ 1 means True

Dr. M. Tanvir Afzal

Boolean Operations

- ✓ AND
- ✓ OR
- ✓ XOR
- ✓ NOT
- ✓ Recall AND/OR usage in search engines

Dr. M. Tanvir Afzal

AND - OR Operations

AND

Inputs ──►[AND gate]──── Output

Inputs	Output
0 0	0
0 1	0
1 0	0
1 1	1

OR

Inputs ──►[OR gate]──── Output

Inputs	Output
0 0	0
0 1	1
1 0	1
1 1	1

Dr. M. Tanvir Afzal

XOR - NOT Operations

XOR

NOT

Inputs ————[XOR gate]———— Output

Inputs ————[NOT gate]———— Output

Inputs	Output
0 0	0
0 1	1
1 0	1
1 1	0
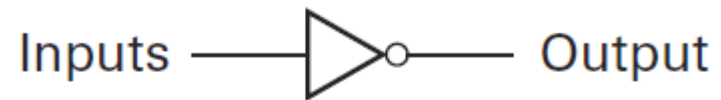
Inputs	Output
0	1
1	0

Dr. M. Tanvir Afzal

Example

A	0	0	1	1	0	1	1	0
B	1	0	0	1	1	0	0	1
AND	0	0	0	1	0	0	0	0
OR	1	0	1	1	1	1	1	1
XOR	1	0	1	0	1	1	1	1
Not (A)	1	1	0	0	1	0	0	1
Not (B)	0	1	1	0	0	1	1	0

Dr. M. Tanvir Afzal

Summary

Boolean Operators
- ✓ AND
- ✓ OR
- ✓ XOR
- ✓ NOT
- ✓ Gates

Dr. M. Tanvir Afzal